Study on Correlation among Modern Logistics and Rural Economic Development

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Abstract

This paper takes Shaanxi province as the research object to analyze the correlation between modern logistics and rural economic development.According to the statistical data from 2007 to 2016, the paper uses grey system theory and grey system modeling software to make an empirical analysis of the development of rural economy and modern logistics business in Shaanxi province.The research shows that there is a strong correlation between the development of rural economy and modern logistics business in Shaanxi province, and the development of rural economy and modern logistics business in Shaanxi province is generally coordinated. However, the lag of development of rural modern logistics, unreasonable logistics transportation structure and inappropriate rural delivery routes hinder the development of rural economy in Shaanxi province to some extent.

Keywords

Modern logistics; rural economy; correlation; coordination; grey theory.

1. Introduction

Logistics industry is an important service industry of the state and a modern leading industry that promotes the transformation of circulation mode and consumption upgrading. It plays an important basic role in the national economy.Since the founding of the People's Republic of China, the logistics industry as a third industry in the rapid development of the industry, in the service of the national economy and the lives of the masses, has an important strategic position.At present, China's logistics industry is developing rapidly, and modern rural logistics has become a new profit growth point to drive China's rural economic development. China's logistics industry has a wide network layout, good brand reputation, advanced infrastructure, strong financial advantages and perfect means of payment and other characteristics, for the promotion of rural economic development and increase employment has made an important contribution.With the deepening of economic globalization and social division of labor, logistics, as a complex organization and management technology, shows an increasingly important strategic position in economic development, and gradually attracts people's attention.Therefore, the interaction between logistics and economic growth has become a research hotspot [1].

2. Literature Review

At present, the research on logistics and economic development is divided into three viewpoints. One view holds that the development of logistics drives the development of economy, that is, "logistics drives economy".In fact, worldwide, the great contribution of logistics to economic development has been recognized by many countries[2].In global economic activity in the logistics system, for the purpose of the use of its infrastructure to achieve economic growth become the inevitable trend, the main factors that influence the logistics system of the country's economic growth can be through the logistics system and the development level of the infrastructure, business environment, unity and

effective utilization of resources and the flexibility of logistics and acceptance of innovation [3].According to Peter Klaus, there is a positive correlation between a country's logistics expenditure and the level of material wealth of the country and the industry. With the continuous optimization of economy, logistics plays an increasingly important role[4].In China, Xiuxia Yan et al. demonstrated the relationship between logistics capacity and regional economy from the three dimensions of the subject, object and carrier of logistics, believing that logistics capacity can improve the efficiency and level of regional economic activities, drive the upgrading of regional industrial structure, and form the "growth pole" of regional economy[5].Expanding the logistics supply scale and logistics demand scale of the whole China and each province can accelerate the national economy and the economic development of each province, which proves that logistics has become one of the most important sources of accelerating economic growth[6].Huaiyu Yuan believed that the more economically developed areas, the greater the role of logistics infrastructure construction on economic growth, and the more economically underdeveloped areas, the greater the role of freight turnover on economic growth [7]. Jian Peng ,on the other hand, believes that logistics capacity makes a great contribution to the overall economic growth, but there is a gap between regions, showing a decreasing trend in the eastern and western regions[8]. Guohui Cui et al. established the hierarchical factor analysis and evaluation model of regional logistics and regional economic development strength, and believed that the development of logistics conforms to the characteristics of economics and marketing, that is, the development of logistics conforms to the characteristics of market demand and investment promotion [9]. Combining with the case of Tianjin Binhai new area, Weilin Liu used the method of system dynamics to carry out simulation demonstration on the relationship and coupling structure between regional logistics system and regional economic growth. The results showed that logistics moderately ahead of its time would slightly slow down regional economic growth in the short term, but could significantly increase regional economic growth in the long term[10]. Taking the new silk road economic belt as the object, Zhoumin Li and other scholars believe that increasing freight turnover and strengthening cooperation among provinces can better promote the economic growth of the belt[11].

The second view is that economic development can drive the development of logistics, that is, "economic pull logistics".Ji Li to use such as annual economic data of the logistics industry and national economic development in Zhejiang province, the relationship between logistics and economic growth of Zhejiang province has carried on the empirical analysis, the empirical results show that the rapid development of Zhejiang economy caused the increase of the logistics demand and investment in the logistics industry growing, resulting in the increase of the logistics industry output value [12].Zuchang Zhong incorporated regional spatial correlation into the analysis model of influencing factors of logistics industry agglomeration, and made an empirical study with panel data of 31 provinces and cities.The process of marketization has negative influence on logistics agglomeration.Infrastructure level has no significant influence on logistics agglomeration [13].Hu Chen, deems that to develop regional economy, the regional economic situation and the relationship between regional logistics capability level is necessary, and to the study, the results show that the Panzhihua region, regional economic development and regional logistics capability is one-way causal relationship between, regional economic development is the development of regional logistics capability [14].

Another view is the "logistics and economic interaction theory", that is, the theory of the interaction between logistics and economy, which believes that the development of logistics and economic growth are mutually causal and two-way [15]. According to the research on the relationship between logistics and the change of economic development speed, corresponding policies and action plans can be made to achieve the synchronization between logistics development and the rapid growth of economy[16].According to Ding Zhang et al., in the provincial scale, both the locus of gravity change and the geographical connection rate show the obvious coupling relationship between logistics and economy in space and time.Under the scale of prefecture-level cities, the geographical concentration degree of logistics and economy shows a spatial correlation and tends to increase, while the regional

imbalance tends to ease[17]. There is a significant correlation between regional logistics and economic development, which is reflected in the correlation between logistics agglomeration and economic agglomeration, the correlation between strong regional logistics links and economic links, and the correlation between regional logistics development and the overall pattern of economic development[18].

Domestic and foreign theoretical research on the relationship between logistics and economic growth has shown that there is a close relationship between the two, and empirical research has also been confirmed to a certain extent.However, from the current research, most of the studies on the relationship between logistics and economy are mainly about the overall analysis of a certain region, and no scholars have conducted quantitative analysis on the relationship between modern logistics and rural economy. Rural logistics is a non-negligible indicator of economic development in rural areas and plays an important role in economic development. These studies provide some constructive Suggestions for exploring the correlation between logistics and rural economic development.Taking Shaanxi province as an example, this paper analyzes the correlation and coordination between logistics industry and rural economic development by applying the grey correlation theory.

3. Survey Region

China is a large agricultural country. According to statistics, by the end of 2016, the number of rural residents in China was as high as 589.73 million, accounting for 42.6% of the total population. For Shaanxi province, as shown in figure 1, the gross domestic product of the primary industry was 6367.07 billion yuan in 2016, compared with 169.385 billion yuan in Shaanxi province.As shown in figure 2, the national consumption level of rural residents in 2016 was 10,752 yuan, and that of Shaanxi province was 8,768 yuan. From 2007 to 2016, the disposable income of rural residents in Shaanxi province continued to increase.

In addition, the planting area of crops in Shaanxi province reached up to 4276.9 thousand hectares in 2016, and the annual grain output reached 12.283 million tons, fruit output 2017.8 million tons, cotton output 34,000 tons, annual oil output 638,000 tons, tea output 62,000 tons and tobacco 69,000 tons. In addition to agricultural products, the animal husbandry in Shaanxi province is also developing very well, producing a large number of animal products every year. In 2016, the output of meat was as high as 1.117 million tons, 1.691 million tons of milk, 593,000 tons of poultry eggs and over 7,000 tons of honey. These agricultural products create huge logistics demand and provide opportunities for the development of Shaanxi logistics industry.The development of Shaanxi logistics industry will also promote the growth of rural economy. Shaanxi logistics industry provides services for the circulation of agricultural products and promotes the transformation of rural production and consumption patterns.The development of rural economy drives the demand of logistics business. On the contrary, the development of logistics business will also promote the growth of rural economy and provide a supporting platform for it.

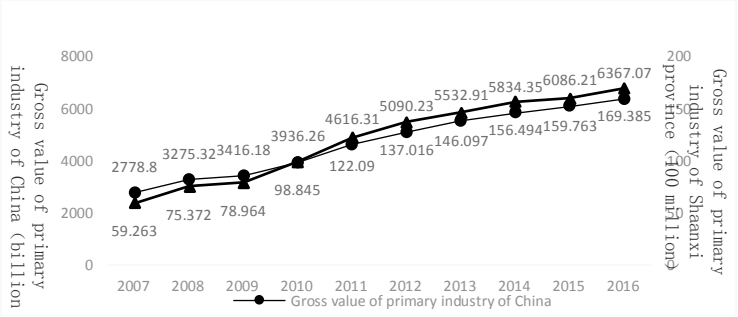

Fig. 1 2007-2016 Gross value of primary industry

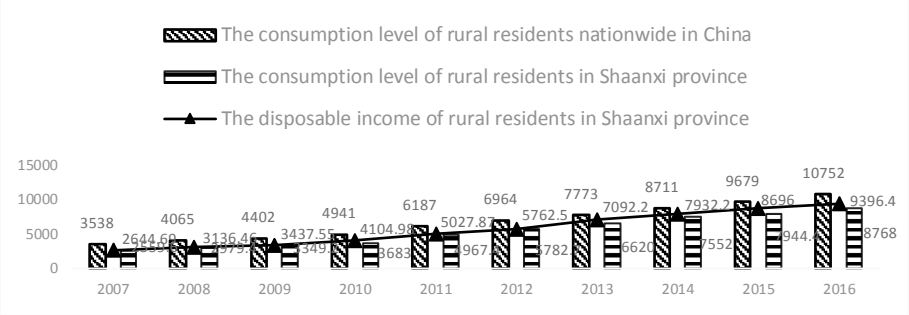

Fig. 2 2007-2016 Economic level of rural residents

4. Research Methods And Data Sources

4.1 Methodology

Grey system theory is a new subject of system science which takes the uncertain system of "small sample and poor information with some known information and some unknown information" as the research object.

4.1.1 Correlation analysis

The basic idea of grey relational analysis is to judge whether the geometric shapes of sequence curves are closely related or not according to their similarity.The closer the curve is, the greater the correlation between corresponding sequences will be, and vice versa.The basic steps are as follows:

(1) Reference sequence: $X_{\circ}=\{x_{\circ}(1),x_{\circ}(2),\cdots,x_{\circ}(n)\}$。

The comparison sequence is denoted as:

$$X_i=\{x_i(1),x_i(2),\cdots,x_i(n)\},i=1,2,\cdots,m。 \tag{1}$$

n is the length of the sequence, m is the number of comparison sequences

(2)In order to ensure the computability of the indicators, In this paper, initial value method is used to process the original data, that is:

$$X_{\mathrm{i}}^{(0)}=X_i/x_i(1)=\left(x_i^{(0)}(1),x_i^{(0)}(2),\cdots,x_i^{(0)}(n)\right),i=0,1,2,\cdots,\ m \tag{2}$$

Find the difference sequence and the two levels of maximum M and minimum difference m

$$\Delta_i(k)=\left|x_0^{(0)}(k)-x_i^{(0)}(k)\right|,\Delta_i=\left(\Delta_i(1),\Delta_i(2),\cdots,\Delta_i(n)\right),i=1,2,\cdots,m;\ \ M=\max_i\max_k\Delta_i(k);\ \ m=\min_i\min_k\Delta_i(k) \tag{3}$$

(4)Find the correlation coefficient $\gamma_{0i}(k)$ and correlation degree γ_{0i}:

$$\gamma_{0i}(k)=\frac{m+\varepsilon M}{\Delta_i(k)+\varepsilon M},\varepsilon\in(0,1),k=1,2,\cdots,n;i=1,2,\cdots,m;\ \ \gamma_{0i}=\frac{1}{n}\sum_{k=1}^{n}\gamma_{0i}(k),i=1,2,\cdots,m \tag{4}$$

4.1.2 Factor coordination analysis

Factor coordination analysis is based on the multi-dimensional gray model GM (1, N) to analyze the dynamic relationship between factors.

$\mathrm{X}_0^{(0)}=(x_0^{(0)}(1),x_0^{(0)}(2),\cdots,x_0^{(0)}(n))$ is the consequence factor; (5)

$\mathrm{X}_i^{(0)}=(x_i^{(0)}(1),x_i^{(0)}(2),\cdots,x_i^{(0)}(n)),i=1,2\cdots,N$ is the influencing factor; (6)

$\mathrm{X}_i^{(1)}$ is $\mathrm{X}_i^{(0)}(i=0,1,\cdots,N)$ generated a new sequence through one accumulation,as:

$$\mathrm{X}^{(1)}=\left\{\mathrm{X}_0^{(1)}(k),\mathrm{X}_1^{(1)}(k),\cdots\mathrm{X}_N^{(1)}(k)\right\}; \tag{7}$$

$x_0^{(1)}$ is a sequence for the adjacent mean of $z_1^{(1)}$: $z_1^{(1)}=(x_0^{(1)}(k)+x_0^{(1)}(k-1))/2,(k=2,3,\cdots N)$。 (8)

The whitening model used to establish the model is as follows:

$$\frac{dx_0^{(1)}}{dt} + ax_0^{(1)} = \sum_{i=1}^{N} b_i x_i^{(1)} \tag{9}$$

$a, b_1, \ldots, b_N$ is the coordination coefficient, a is the self-coordination coefficient, also known as the development coefficient of $x_0^{(0)}, b_i, i = 1,2,\cdots,N$ is the coordination coefficient of the system. Under the least square rule, there is $\mathrm{P} = (B^T B)^{-1} B^T Y$

$$\mathrm{P} = \begin{bmatrix} a \\ b_1 \\ \vdots \\ b_N \end{bmatrix}, \quad \mathrm{B} = \begin{bmatrix} -z_1^{(1)}(2) & x_1^{(1)}(2) & \cdots & x_N^{(1)}(2) \\ -z_1^{(1)}(3) & x_1^{(1)}(3) & \cdots & x_N^{(1)}(3) \\ \vdots & \vdots & & \vdots \\ -z_1^{(1)}(n) & x_1^{(1)}(n) & \cdots & x_N^{(1)}(n) \end{bmatrix}, \quad \mathrm{Y} = \begin{bmatrix} x_0^{(0)}(2) \\ x_0^{(0)}(3) \\ \vdots \\ x_0^{(0)}(n) \end{bmatrix} \tag{10}$$

The approximate time response of the $GM(1,\mathrm{N})$ model is:

$$\hat{x}_0^{(1)}(k+1) = (x_0^{(0)}(1) - \frac{1}{a}\sum_{i=1}^{N} b_i x_i^{(1)}(k+1))e^{-ak} + \frac{1}{a}\sum_{i=1}^{N} b_i x_i^{(1)}(k+1) \tag{11}$$

4.2 Data Sources

This paper selects the evaluation index which can reflect the rural economy of Shaanxi province: the gross product of primary industry of Shaanxi province（X_0/billion yuan）;Reflects the factors of logistics business in Shaanxi province: the total amount of postal business(X_1/billion yuan), business outlets(X_2/unit), the total length of post routes（X_3/km）, rural delivery line(X_4/km), express delivery business(X_5/thousand pieces), rail freight(X_6/gigaton), road freight(X_7/gigaton), rail freight turnover(X_8/billion ton-km), road freight turnover(X_9/billion ton-km), the highway transportation line length(X_{10}/km), line length of railway transportation(X_{11}/km). This paper analyzes the grey relation between logistics business and rural economic development in Shaanxi province.The data are from China statistical yearbook 2008-2017, which covers the period from 2007 to 2016. The total amount of postal business, the number of business outlets, the total length of postal routes and the volume of express delivery business are from postal enterprises and express delivery enterprises that have obtained the business license of express delivery. See Table 1.

Table 1 2007-2016 Shaanxi province rural economy and logistics business related statistics

Year	k	$X_0(k)$	$X_1(k)$	$X_2(k)$	$X_3(k)$	$X_4(k)$	$X_5(k)$	$X_6(k)$	$X_7(k)$	$X_8(k)$	$X_9(k)$	$X_{10}(k)$	$X_{11}(k)$
2007	1	592.63	24.5	1818	102843	124554	16450	932.1	3973.6	93.6	255	121297	3750
2008	2	753.72	27.63	1806	104215	122691	19750	2261.5	6071.3	112.1	905	131038	3750
2009	3	789.64	30.88	1756	113537	123085	20700	2442.1	6796.3	118.5	1029	144109	3770
2010	4	988.45	37.42	1934	151470	134262	25830	2712.1	7712.3	126.8	1196	147461	4445
2011	5	1220.9	28.89	1974	237536	136369	39420	3029.9	9041.9	135.4	1470	151986	4449
2012	6	1370.16	31.34	2428	146020	127543	50850	3194.2	10459.3	144.7	1745	161411	4464
2013	7	1526.05	37.02	2702	52302	124071	95520	3576.7	10556.6	151.5	1685	165249	4803
2014	8	1564.94	45.94	3548	64780	125548	137620	3748.3	11934.3	160.3	1917	167145	4924
2015	9	1597.63	61.48	4801	208078	124903	203510	3295.1	10773.1	143.6	1827	170069	4549
2016	10	1693.84	92.03	6435	209355	124306	369020	3545.9	11336.3	151.8	1926	172471	4633

5. Result and Discussion

5.1 Correlation Analysis Results

By calculation, the correlation degree of each influence factor is obtained, as shown in table 2:

Table 2 Rural economy and logistics business related degree

	$X_1(k)$	$X_2(k)$	$X_3(k)$	$X_4(k)$	$X_5(k)$	$X_6(k)$	$X_7(k)$	$X_8(k)$	$X_9(k)$	$X_{10}(k)$	$X_{11}(k)$
correlation degree	0.95128	0.94603	0.93371	0.90855	0.80872	0.90501	0.98119	0.94294	0.75062	0.92856	0.91991

From the above analysis results, we can get:

There is a strong correlation between the GDP of the primary industry in Shaanxi province and the total amount of postal services, business outlets, the total length of postal roads, rural delivery lines, express business volume, freight volume, freight turnover and the length of transport lines, with the correlation coefficient higher than 0.75.This shows that the development of logistics business in Shaanxi province can promote the development of rural economy, especially the development of primary industry. At the same time, the growth of rural economy in Shaanxi province will also drive the development of logistics business, providing more business volume and corresponding supporting platform for logistics business. In general, the development of logistics business and rural economy in Shaanxi province promote and influence each other.

The correlation between the relevant elements of logistics business in Shaanxi province and rural economy is 9 elements with the grey correlation degree over 0.9. Among them, the correlation degree of highway freight volume is the most significant, the gray correlation degree is as high as 0.98119;Secondly, the total amount of postal services, the gray relational degree is 0.95128;Then is the number of business outlets, gray relational degree of 0.94603;The rest are: railway freight turnover, gray relational degree of 0.94294; total length of postal routes, gray relational degree of 0.93371; length of highway transport lines, gray relational degree of 0.92855; length of railway transport lines, gray relational degree of 0.91991; rural delivery lines, gray relational degree of 0.90855; railway freight volume, gray relational degree of 0.90501.Value of grey correlation degree in the same way, express delivery business more than 0.8, 0.80872, shows that the express delivery business in Shaanxi province still have a large impact on the development of rural economy, embodied in the improvement of the transportation lines, especially the improvement of the rural lines such as infrastructure and the improvement of management level of the development of rural economy in Shaanxi province has played a great role in promoting. Finally, the least correlated value is highway freight turnover, which is 0.75062, indicating that the amount of highway freight turnover has a relatively small impact on the rural economy.

5.2 Coordination Analysis Results

By grey system modeling software for data calculation and can calculate the first industry of shaanxi province total GDP and postal services, business office, the post road, the total length of the rural delivery line, express delivery business, the railway freight volume and road freight, rail freight turnover, road freight turnover, the highway transportation line length, the railway transport line length of multidimensional grey parameters and the analysis of the coordination model of approximate time response type:

$a=1.8590$; $b_1=-1.1805, b_2=-0.1447, b_3=0.1770$, $b_4=-5.3593, b_5=0.1854, b_6=-0.4264, b_7=-1.8594$, $b_8=-0.8962, b_9=0.8417, b_{10}=2.9134, b_{11}=7.5687$。

The albino model is:

$$\frac{dx_0^{(1)}}{dt}+1.859x_0^{(1)}=-1.1805x_1^{(1)}-0.1447x_2^{(1)}+0.177x_3^{(1)}-5.3593x_4^{(1)}+0.1854x_5^{(1)}-0.4264x_6^{(1)}-1.8594x_7^{(1)}$$
$$-0.8962x_8^{(1)}+0.8417x_9^{(1)}+2.9134x_{10}^{(1)}+7.5687x_{11}^{(1)}$$

The approximate time response of the model is:

Through calculation, the obtained system characteristic simulation values and residual test results are shown in table 3, and the average relative error is 7.77%.Therefore, this model can basically reflect the impact of logistics business factors on the development of rural economy in Shaanxi province.

$$\begin{aligned}\hat{X}_0^{(1)}(k+1) = (&1+0.635x_1^{(1)}(k+1)+0.0778x_2^{(1)}(k+1)-0.0952x_3^{(1)}(k+1)+2.8829x_4^{(1)}(k+1)\text{-}0.0997x_5^{(1)}(k+1)\\ &+0.2294x_6^{(1)}(k+1)+1.0002x_7^{(1)}(k+1)+0.4821x_8^{(1)}(k+1)\text{-}0.4528x_9^{(1)}(k+1)\text{-}1.5672x_{10}^{(1)}(k+1)\\ &\text{-}4.0714x_{11}^{(1)}(k+1))e^{-1.859k}-0.635x_1^{(1)}(k+1)-0.0778x_2^{(1)}(k+1)+0.0952x_3^{(1)}(k+1)-2.8829x_4^{(1)}(k+1)\\ &+0.0997x_5^{(1)}(k+1)-0.2294x_6^{(1)}(k+1)-1.0002x_7^{(1)}(k+1)-0.4821x_8^{(1)}(k+1)+0.4528x_9^{(1)}(k+1)\\ &+1.5672x_{10}^{(1)}(k+1)+4.0714x_{11}^{(1)}(k+1)\end{aligned}$$

Table 3 Test results of the GM(1,n) model

k	Actual Value $X_0^{(0)}$	Analog Value $\hat{x}_0^{(0)}(k)$	Residual Error $\varepsilon(k)=X_0^{(0)}(k)-\hat{X}_0^{(0)}(k)$	Relative $\Delta_k=\frac{\lvert\varepsilon(k)\rvert}{x_0^{(0)}(k)}$
2	1.2718	1.0728	0.199	15.65%
3	1.3324	1.5	-0.1676	12.58%
4	1.6679	1.7768	-0.1089	6.53%
5	2.0601	2.1667	-0.1066	5.18%
6	2.312	2.4443	-0.1323	5.72%
7	2.575	2.705	-0.13	5.05%
8	2.6407	2.8032	-0.1625	6.15%
9	2.6958	2.8544	-0.1586	5.88%
10	2.8582	3.0626	-0.2044	7.15%

Result analysis:

From the calculation results, the development coefficient a=1.859 > 0, indicating that the primary industry GDP of Shaanxi province has a certain development ability under the action of many factors.From the perspective of the coordination coefficient b value, it can be written:

That is, line length of railway transportation > > the highway transportation line length > > road

$$\begin{array}{ccccccccccccccccccccc} b_{11} & \succ & b_{10} & \succ & b_9 & \succ & b_5 & \succ & b_3 & \succ 0 \succ & b_2 & \succ & b_6 & \succ & b_8 & \succ & b_1 & \succ & b_7 & \succ & b_4 \\ \Downarrow & & \Downarrow & & \Downarrow & & \Downarrow & & \Downarrow & & \Downarrow & & \Downarrow & & \Downarrow & & \Downarrow & & \Downarrow & & \Downarrow \\ 7.5687 & & 2.9134 & & 0.8417 & & 0.1854 & & 0.177 & & -0.1447 & & -0.4264 & & -0.8962 & & -1.1805 & & -1.8594 & & -5.3593 \end{array}$$

freight turnover > > express delivery business > > the total length of post routes > >business outlets > >rail freight volume> >rail freight turnover> >the total amount of postal business > > road freight volume > > rural delivery lines.

The largest coefficient of coordination is the length of railway transport line 7.5687, which indicates that this factor is the primary factor affecting the development of rural economy in Shaanxi province. Followed by the highway transportation, length of 2.9134,indicates that the development of the rural economy in Shaanxi province was also played a certain role in promoting.Highway freight turnover, express delivery business and post road total length coefficient values were 0.8417, 0.1854, 0.177, greater than 0, belong to the same order of magnitude, indicating that their effect of Shaanxi rural economy, have the same status, is also must pay attention to factors. The coefficient values of other factors are all negative. Among them, the coefficient values of business network, railway freight volume and railway freight turnover are all between 0 and -1. Although they do not promote the

development of rural economy in Shaanxi province, the coefficient of coordination is relatively low. The coefficients of postal service volume and highway freight volume are respectively -1.1805 and -1.8594, which belong to the same order of magnitude, indicating that they restrict the development of rural economy in Shaanxi province.The coefficient value of the rural delivery line is the lowest, which is -5.3593, indicating that it is a constraint factor for the rural economic development in Shaanxi province. This indicates that if the rural delivery line is not properly planned, the rural economic development will be hindered to some extent.

6. Conclusion and Countermeasures

This paper theoretically analyzes the correlation and coordination between the development of rural economy and logistics business. Taking the data of Shaanxi province's primary industry GDP and related factors of logistics business from 2007 to 2016 as samples, it makes an empirical analysis by using grey correlation analysis and dynamic grey system GM(1, n) model. The results show that the development of rural economy and the high correlation between logistics business, at the same time, the development of rural economic and the development of the logistics business in general is to coordinate, but the postal business, highway freight volume, especially the development of rural economy rural delivery line has a certain degree of inhibition.

Through research and analysis, the results show that the coordination coefficient of the total amount of postal business, highway freight volume and rural delivery lines are all less than -1, which indicates that the lag of rural logistics development, unreasonable logistics and transport structure and inadequate optimization of rural delivery lines have become important reasons restricting the logistics industry to promote the development of rural economy.In this regard, this paper puts forward the following three specific Suggestions:

(1) Strengthen professional personnel training and guide rural residents to strengthen the concept of modern logistics.Although total amount of postal businessis very big, but occurs in the rural area the volume of service is relatively small.The development of logistics in rural areas is slow, and talents are the indispensable power to drive the development of rural economy and logistics. The coordinated development of rural economy and logistics business requires a large number of high-quality and professional logistics talents, which drives the construction of logistics informatization and infrastructure in rural areas.Therefore, it is necessary to strengthen the professional training of on-the-job employees, and at the same time, in the process of selecting, transferring and introducing new talents, it is necessary to conduct a strict investigation on them, provide customers with professional logistics services, and drive rural residents to change old ideas and accept advanced logistics concepts.

(2) Improve the transport structure and build two-way transport channels.The above research shows that the factor of highway freight volume hinders the growth of rural economy, indicating that the development of highway freight is not very mature and there are still many problems.At present, rural logistics is more about the one-way circulation of goods from cities to rural areas, mainly following the mode of "production enterprises + postal system + farmers", and the output of agricultural products is not perfect. Therefore, the construction of rural two-way logistics system is the trend of rural logistics development.It is necessary to improve the logistics infrastructure of agricultural products, form a "green channel" for the circulation of agricultural products, and reduce the loss of agricultural products in the process of circulation.In addition, the freezing and fresh-keeping technology of agricultural products should be strengthened to build a logistics center integrating processing, storage and distribution.

(3) Optimizing rural delivery routes and improving village-level logistics service points.At present, the rural areas are sparsely populated, the logistics circulation chain is relatively long, the logistics network is small, and the logistics distribution to households is difficult to achieve.Rural logistics services need to be further improved to speed up the pace of professional development of rural logistics.Therefore, we need to optimize rural logistics distribution system, should cooperate with local government, establish a county as the center of the logistics service center, the township area as the center of the logistics service, and extend to the service points of each village, perfect

transportation network, promote the construction of rural logistics hub station, ensure smooth logistics to promote two-way logistics system construction in the countryside.

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